

2. INTRODUCTION

Miller, Reed and Pietrafesa (1984) discussed the migratory routes of five species of estuarine dependent finfish larvae and juveniles along the North Carolina (NC) continental shelf. These five species, Atlantic menhaden (*Brevoortia tyrannus*), Spot (*Leiostomus xanthurus*), Atlantic Croaker (*Micropogonias undulatus*), Southern Flounder (*Paralichthys lethostigma*) and Summer Flounder (*P. dentatus*), constitute only 10% of the fish species found in NC estuarine and coastal waters. However, these five finfish comprise upwards of 90% of the annual commercial catch in NC coastal waters. All five species spawn during the winter months near the shelf break along the western wall of the Gulf Stream. Their larvae and juveniles then migrate some 100 kilometers to major inlets in the barrier island chain (as shown in Figure 1) and then another 25-100 km to nursery areas across Pamlico Sound. Abiotic mechanisms to transport these larvae and juveniles across the shelf have been proposed by Pietrafesa and Miller (1986), through the inlets by Pietrafesa and Janowitz (1988) and across the Pamlico Sound by Pietrafesa, et al. (1987).

However, while these ocean spawned finfish use Pamlico Sound as a nursery, they are not found in any significant numbers in Albemarle Sound (Epperly and Ross, 1985). In fact their presence in the Albemarle is only occasional while they are found throughout the Pamlico. Hence the purpose of this study.

The Albemarle - Croatan - Pamlico Sounds Estuarine system (Figure 2) is the largest coastal lagoonal system in the United States. Pamlico Sound is approximately 140 km long in the northeast-southwest direction and 25-55 km in the northwest-southeast direction. The Albemarle is approximately 85 km aligned east-northeast to west-southwest and is as wide as 20 km in the eastern and narrowing to some 8 km at the western end. The two sound basins, Pamlico and Albemarle, are connected to each other by Croatan and Roanoke Sounds, separated